Remarks

I. Introduction

This is in response to the final Office Action dated June 1, 2006. The Office Action rejects claims 1-4 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The Office Action then rejects claims 1 and 8 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6 and 8 of U.S. Patent No. 6,928,485 in view of U.S. Patent No. 6,570,866 to Murase et al. ("Murase"). Finally, the Office Action rejects claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,529,508 to Li et al. ("Li") in view of U.S. Patent No. 6,061,712 to Tzeng ("Tzeng"). Claims 1-20 remain under consideration.

II. Rejection: 35 U.S.C. §112, Second Paragraph

The Office Action first rejects claims 1-4 under 35 U.S.C. §112, second paragraph as being indefinite. In particular, the Office Action states that it is uncertain in claim 1, lines 9-10, whether "the plurality of client IP addresses" refers to "a plurality of IP addresses" in lines 5-6.

In response to this rejection, Applicants have amended claims 1 and 2 to replace the phrase "plurality of client IP addresses" in those claims with the phrase "plurality of IP addresses." As a result of this amendment, claims 1 and 2 are now definite. Although claim 3 has not been amended, that claim is also definite because claim 3 claims with particularity that the IP addresses of claim 1 are network client IP addresses.

For these reasons, claims 1-4 are now definite. As a result, Applicants request the withdrawal of the rejection under 35 U.S.C. §112.

III. Rejection: Obviousness-Type Double Patenting

The Office Action next rejects claims 1 and 8 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 6 and 8 of U.S. Patent No. 6,928,485 in view of Murase. In response to this rejection, Applicants are filing herewith a terminal disclaimer disclaiming the terminal part of the statutory term of

any patent granted on the instant application which would extend beyond the expiration of the full statutory term of U.S. Patent No. 6,928,485. As a result, the obviousness-type double patenting rejection has been overcome. Accordingly, Applicants request the withdrawal of this rejection.

IV. Rejection: 35 U.S.C. §103(a)

The Office Action next claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Li in view of Tzeng. Applicants traverse.

In order for an invention to be obvious under 35 U.S.C. §103(a), there must be some suggestion to combine or modify cited prior art references in a manner which would show or suggest all elements of the claimed invention. For the following reasons, neither Li nor Tzeng, alone or in combination, teach all elements of claims 1-20.

Li teaches a method and apparatus for classifying packets (not IP addresses) whereby multiple parameter values for a packet are processed in parallel to obtain answer sets indicating which rules are matched by each parameter value. According to Li, answer indexes are used to identify logical blocks in each answer set which contain TRUE values. Then, AND operations on the answer indexes are used to identify blocks in the answer sets which could contain bits corresponding to matched rules and to identify particular rules matched by the packet.

Tzeng teaches a method for IP routing table look-up using a hashed radix tree method for IP router look-up operations. According to Tzeng a high speed route look-up operation is used that reduces or eliminates router performance bottleneck. A hashed radix tree method hashes the first k bits of an X bit IP address to several radix trees, each of which is smaller than a single radix tree examining an entire IP address. The first k bits of the IP address of the IP data packet are used as an index to a RAM whose output is a pointer to the root node of one of these smaller radix trees. As taught by Tzeng, each of the radix trees examines the significant bits of the remaining n-k bits of the IP address for a match. Each match is stored in memory at least until a better match is found. A match at a leaf node is considered a best match. If a match is found a pointer to a second RAM is obtained, whose output is the best route.

The present invention is directed to a method for determining the placement of servers within a distributed information network. This method uses information from at least one network log, such as a server log or proxy log, and at least one network routing table to arrange clients into related client clusters. More particularly, independent claims 1, 5, 8 and 17 are each directed to an on-line method of classifying IP addresses, such as the IP addresses of clients, into related clusters within the distributed information network. Each of those claims includes elements associated with generating "a unified prefix/netmask table" from a plurality of network routing table prefix/netmask entries, where the unified prefix/netmask entries comprise a plurality of IP addresses, and then to group or classify those IP addresses using common address prefixes that have been determined according to a radix encoded trie classification process.

V. Independent Claims 1, 5, 8 and 17

The Office Action rejects claims 1, 5, 8 and 17 stating, in part, that Li teaches the element of "generating a unified prefix/netmask table from a plurality of network routing table prefix/netmask entries, said unified prefix/netmask entries comprising a plurality of IP addresses. More particularly, the Office Action cites figs. 7-8; column 8, lines 5-25; and column 12, lines 14-38 as teaching this element. However, Applicants disagree that these cited passages teach this element.

Figs. 7-8 of Li shows an answer set comprising an output vector with an answer index comprising a two-tiered header. As is described at column 3, lines 50-57 of Li, answer sets contain information related to a packet signature. Operations are performed on the answer sets in order to determine if one or more rules are satisfied by the answer set. Based on this determination, packets can be classified. This figure does not teach or suggest in any way the element of claims 1, 5, 8 and 17 of generating a unified prefix/netmask table from routing table entries where the entries comprise IP addresses.

Column 8, lines 5-25 of Li states, in its entirety"

> The inventors have found that for classifying IP packets the following 9 parameters are particularly useful: input port; source IP address; destination IP address; source TCP/UDP port number; destination TCP/UDP port number; type of service; layer 4 packet type; ack bit; and, time of arrival.

According to the preferred embodiment of the invention, each rule is of the form:

> CLASS M: parameter 1=condition to be satisfied by parameter 1;
> parameter 2=condition to be satisfied by parameter 2;
> parameter 3=condition to be satisfied by parameter 3;
> . . .
> parameter N=condition to be satisfied by parameter N.

A packet belongs to class M if every parameter value in the packet's signature matches the corresponding condition specified by the rule. The condition may be that the parameter value be the same as a particular value, that the parameter value be one of a number of specified values or that the parameter value be within a range of values specified in the class definition rule.

Accordingly, this passage of Li teaches that IP packets can be classified by comparing rule conditions to one or more parameters, including IP addresses. Once again, this passage does not teach or discuss or suggest in any way the element of claims 1, 5, 8 and 17 of generating a unified prefix/netmask table from routing table entries where the entries comprise IP addresses.

Column 12, lines 14-38 of Li states, in its entirety:

> One procedure for optimizing the ordering of rules in the src dimension involves grouping "neighbourhoods" of rules together. If R is the set of classification rules and r is a particular rule in R then one can define src(r) as being the condition imposed on a packet's src value by rule r. For example, if r is the following two-dimensional rule:
>
> Class A: src=123.120.0.0/16 dst=189.78.0.0/16
>
> where/16 indicates that the src value of a packet must match the network ID portion which makes up the first 16 bits of the IP address 123.120.0.0 or the packet cannot satisfy r, then src(r)=123.120.0.0/16. In some rules the src value does not matter. For such rules one can write src(r)=*.
>
> If r1 and r2 are two rules in R then r1 and r2 are neighbors if either src(r1) is a prefix of src(r2) or src(r2) is a prefix of src(r1). The relationship between two neighboring rules can be indicated as r1.about.r2. For example, the following rules are neighbors in the src dimension:
>
> r1: Class A: src=123.120.0.0/16; dst=189.78.0.0/16
>
> r2: Class B: src=123.120.9.0/24; dst=120.78.0.0/16.
>
> A neighborhood in the src dimension is a subset S of R such that r1.about.r2 for any two rules r1 and r2 in S. The neighborhood is an "entire" neighborhood if no rule r in S is neighbors in the src dimension with any rule in R-S (R-S is the set of all rules in R which are not in S).

Accordingly, this passage of Li simply states that different rules used in the classification of packets can be combined into a neighborhood of rules. This passage, once again, does not teach or discuss or suggest in any way the element of claims 1, 5, 8 and 17 of generating a unified prefix/netmask table from routing table entries where the entries comprise IP addresses.

The Office Action then rejects claims 1, 5, 8 and 17 stating that column 4, lines 16-24 and column 12, lines 14-38 of Li each teaches the element of "grouping IP addresses which share a common prefix into a network client cluster." Once again, Applicants disagree that these passages of Li teach this element of claims 1, 5, 8 and 17. Specifically, column 12, lines 14-38 teach only that rules that are used in the classification of packets can be grouped into neighborhoods. This passage does not teach, discuss or suggest grouping IP addresses (of network client computers) into network client clusters.

Column 4, lines 16-24 of Li teaches in its entirety:

> The performance of the classification methods of the invention may be optimized by ordering the rules in a way such that true flags tend to be clustered into the same block in one of the answer sets. This reduces the number of AND operations needed to identify a rule which is matched by the signature of a packet. One way of achieving such an optimization is to group the rules so that flags corresponding to subsets of the rules which are neighbors are grouped together.

Thus, this passage teaches that the packet classification method of Li can be optimized by ordering rules into groups so as to reduce the number of operations applied to a packet signature during the classification process. This passage also does not teach, discuss or suggest grouping IP addresses (of network client computers) into network client clusters.

For the forgoing reasons, the cited passages of Li do not teach or suggest the claim elements of claims 1, 5, 8 and 17 associated with generating "a unified prefix/netmask table" from a plurality of network routing table prefix/netmask entries, where the unified prefix/netmask entries comprise a plurality of IP addresses, and then to group or classify those IP addresses using common address prefixes that have been determined according to a radix encoded trie classification process. There is no assertion

that Tzeng teaches these elements. Accordingly, neither Li nor Tzeng, alone or in combination, teach or suggest all elements of claims 1, 5, 8 and 17. As a result, these claims are allowable. It follows that dependent claims 2-4, 6-7, 9-16 and 18-20 are allowable as being dependent upon an allowable base claim. Therefore, Applicants request that the rejection of claims 1-20 under 35 U.S.C. §103(a) be withdrawn and that those claims be allowed.

VI. Dependent claims 13-14

The Office Action rejects claims 13 and 14, which are each dependent upon independent claim 8, "for the same reasons set forth in claim 1 above." In addition, the Office Action cites Li, column 15, line 58 – column 16, line 62 as disclosing that "the retrie includes a fixed number of retrie levels."

Claim 13 claims, in part:

> wherein the retrie includes shift, mask values which are combined into a single value in a predecessor table.

And claim 14 claims, in part:

> wherein the elements in a last retrie table level contain only a next hop index so as to decrease the retrie table size.

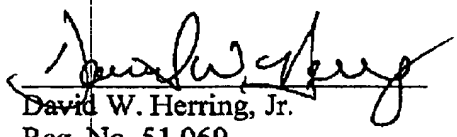
However, as discussed above, none of the passages cited in the rejection of claims 1, 5, 8 and 17 teach anything related to a retrie or to the specific elements associated with a retrie as claimed in claims 13 and 14. The cited passage of columns 15 and 16 discusses a search algorithm of IP addresses for the classification of packets and that the algorithm can use different levels of IP addresses. However, this cited passage does not teach that the retrie can include shift, mask values which are combined into a single value in a predecessor table, as is claimed in claim 13. This cited passage also makes no teaching or suggestion that a last retrie level can contain only a next hop index to decrease the retrie table size as is claimed in claim 14. Thus, the cited passage of Li does not teach or

suggest all elements of claims 13 and 14 and, therefore, those claims are allowable for this additional reason.

VII. Conclusion

In response to the rejection under 35 U.S.C. §112, Applicants have amended claims 1 and 2 to remove the term "client". No new matter has been introduced as a result of these amendments. In response to the double patenting rejection, Applicants are filing herewith a terminal disclaimer. Finally, Applicants have traversed the rejection of the claims under 35 U.S.C. §103(a). For the reasons discussed above, neither Li nor Tzeng, alone or in combination, teach or suggest all elements of the claims as currently pending. As a result, claims 1-20 are allowable over the cited art. Reconsideration and allowance of all claims is respectfully requested.

Respectfully submitted,



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